

Radar

The Atlantic Test Ranges (ATR) operates four instrumentation-caliber tracking radar to provide precise and accurate Time, Space and Position Information (TSPI) for the research, development, test and evaluation (RDT&E) of fixed- and rotary-wing aircraft, as well as Unmanned Air Systems (UAS).



Range Instrumentation Radar (RIR-778)

Radar can be used for real time tracking of cooperative (beacon) and non-cooperative (skin) targets. Beacon transponders, provided, aligned and maintained by ATR radar personnel, are used to provide cooperative tracking capabilities. Each radar is capable of tracking in skin, beacon and optical mode, or switching between modes when required. All radar are located at Cedar Point in the vicinity of the main ATR complex.

Radar measures the time-of-arrival and angle-of-arrival from emitted pulses to generate azimuth, elevation and range of a target. This data is published real-time to the Advanced Range Operational Network (ARON) data distribution network. ATR radar TSPI data is used as a final data product of an object's position in space versus time. This same radar data is also used as pointing information for RCS measurements, chaff measurements, and pointing of emitter sources. TSPI is also provided as a source of pointing information for optical instrumentation for weapons release and delivery testing. Real-time radar data is used for aircraft vectoring and safety monitoring during flight operations at ATR.

The ATR radar site also maintains five surveillance radar systems used by the SureTrak surveillance system. These computer-based surface search radar are used to maintain range safety during flight test and evaluation and to monitor shoreline security in accordance with Homeland Security and Chief of Naval Installations directives.



Multiple-target Instrumentation Radar (MIR)



Furuno surveillance radar

for more information

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Radar

range instrumentation radar

The three RIR-778 (Range Instrumentation Radar) are precision, computer-based, single-object-tracking systems that are designed to obtain continuous and highly accurate position of targets for flight test programs.

- X- and C-band, 8.5-9.6 and 5.4-5.9 GHz
- 250Kw peak power, magnetron based
- Loop gain = 210-215 dB, dependent upon pulsewidth
- 0.25, 0.5 and 1.0 microsecond gated CW transmitted pulse width at 160, 320, 640 and 1024 PPS
- Output data rate (TSPI information), 100 Hz
- Auto acquisition using Raster scan or Circular scan
- Option of angle tracking with optical contrast tracker



RIR-778 C-band

multiple-target instrumentation radar

The Multiple-target Instrumentation Radar (MIR), AN/FPQ-17, incorporates an 8973-element, phased-array antenna which provides instantaneous beam pointing over 70 x 60 degrees. This permits precision tracking of multiple skin and beacon targets, 16 total, while simultaneously providing surveillance in two selected search volumes. The antenna array is mounted on an elevation-over-azimuth pedestal providing hemispherical coverage. The phased-array antenna system allows the MIR to perform the function of several single-object trackers.

- C-band, frequency diverse, 5.4-5.9 Ghz
- 150Kw peak power, coherent TWT final amplifier
- Loop gain = 205-231 dB, dependent on pulsewidth
- 0.25 and 2.0 microsecond gated CW, 100 microsecond 12 MHz LFM Chirp transmitted pulse widths
- 320 Hz fixed PRF, time-division-multiplexed to deliver 20, 10, and 5 Hz, up to 16 independent tracks simultaneously
- 2 independent, operator-defined, search/acquisition volumes
- Target acquisition can be automatic or manual
- Trajectory acquisition modes to acquire separating objects
- Pulse-to-Pulse frequency and pulsewidth agility



MIR console display



Radar beacons supported by ATR